

Having, thus, described the invention, what is claimed is:

1 1. An apparatus for fixing the position of a metal end cap on a porous filter element,

2 the apparatus comprising:

3 a filter support mechanism for supporting a filter element;

4 a first inductive heater disposed at a first side of said filter element support

5 mechanism and being reciprocally movable with respect thereto; and

6 a drive system for selectively and reciprocally moving said first inductive heater

7 toward and away from said filter support mechanism.

2. The apparatus of claim 1, further comprising a second inductive heater disposed at

a second side of said filter element support mechanism and being reciprocally movable with
respect thereto; and wherein said drive system is operable to simultaneously move said first
and second inductive heaters in substantially opposite directions.

3. The apparatus of claim 2, further comprising first and second support pillars,

2 wherein said first inductive heater is movably supported in said first pillar, and said second

3 inductive heater is movably supported in said second pillar.

4. The apparatus of claim 3, further comprising a control shaft extending between said

2 first and second support pillars and being rotatably mounted thereto, said control shaft having

3 a first end with a right-hand threading formed thereon, and a second end with a left-hand

4 threading formed thereon, wherein each of said first and second heaters are threadably
5 connected to said control shaft.

1 5. The apparatus of claim 4, further comprising a motor, operatively connected to said
2 control shaft, for rotating said control shaft to move said inductive heaters in substantially
3 opposite directions.

1 6. An apparatus for fixing the position of metal end caps on a porous filter element,
2 the apparatus comprising:

3 a support structure comprising first and second side pillars and a boom
4 interconnecting the side pillars;
5 a control shaft disposed within said support structure and rotatably mounted thereto,
6 said control shaft having a first end with a right-hand threading formed thereon, and a second
7 end with a left-hand threading formed thereon;

8 a first inductive heater located in said first side pillar and movably supported on said
9 control shaft; and

10 a second inductive heater located in said second side pillar and movably supported on
11 said control shaft.

1 7. The apparatus of claim 6, further comprising a motor, operatively connected to said
2 control shaft, for rotating said control shaft to move said inductive heaters in substantially
3 opposite directions.

- 1 8. A method of forming a filter cartridge, comprising the steps of:
- 2 a) supporting a substantially cylindrical porous filter element at a central portion
- 3 thereof;
- 4 b) transferring the filter element to an end cap application station;
- 5 c) placing a pair of metal end caps, having an adhesive therein, on opposite ends of
- 6 said filter element;
- 7 d) transferring the filter element to an inductive heating station; and
- 8 e) heating the end caps, by inductive heating, thereby fixing the position of the end
- 9 caps on the filter element.

1 9. The method of claim 8, further comprising the steps of :

2 f) transferring the heater element, with attached end caps, to a final cure conveyor;

3 and

4 g) moving the heater element, on the final cure conveyor, through a final cure oven.

1 10. The method of claim 9, wherein said filter is rotated from a substantially

2 horizontal orientation to a substantially vertical orientation thereof during step f).

1 11. An apparatus for fixing the position of a metal end cap on a porous filter element,

2 the apparatus comprising:

3 a filter support apparatus for supporting a filter element, said filter support apparatus

4 being movable from a first station to a second station;

5 an emplacement applicator located at said first station for placing an end cap on an

6 end of a filter element held by said filter support apparatus;
7 a first inductive heater disposed at said second station and being reciprocally movable
8 with respect to said filter support apparatus; and
9 a heater moving device for selectively and reciprocally moving said first inductive
10 heater toward and away from said filter support apparatus at said second station.

1 12. The apparatus of claim 11, further comprising a second inductive heater at said
2 second station, and wherein said heater moving device is operable to move said first and
3 second inductive heaters simultaneously in opposite directions.

13. The apparatus of claim 1, wherein the filter support mechanism comprises a gripper assembly which is movably mounted on a continuous loop chain conveyor.

14. The apparatus of claim 11, wherein the filter support mechanism comprises a gripper assembly which is movably mounted on a continuous loop chain conveyor.